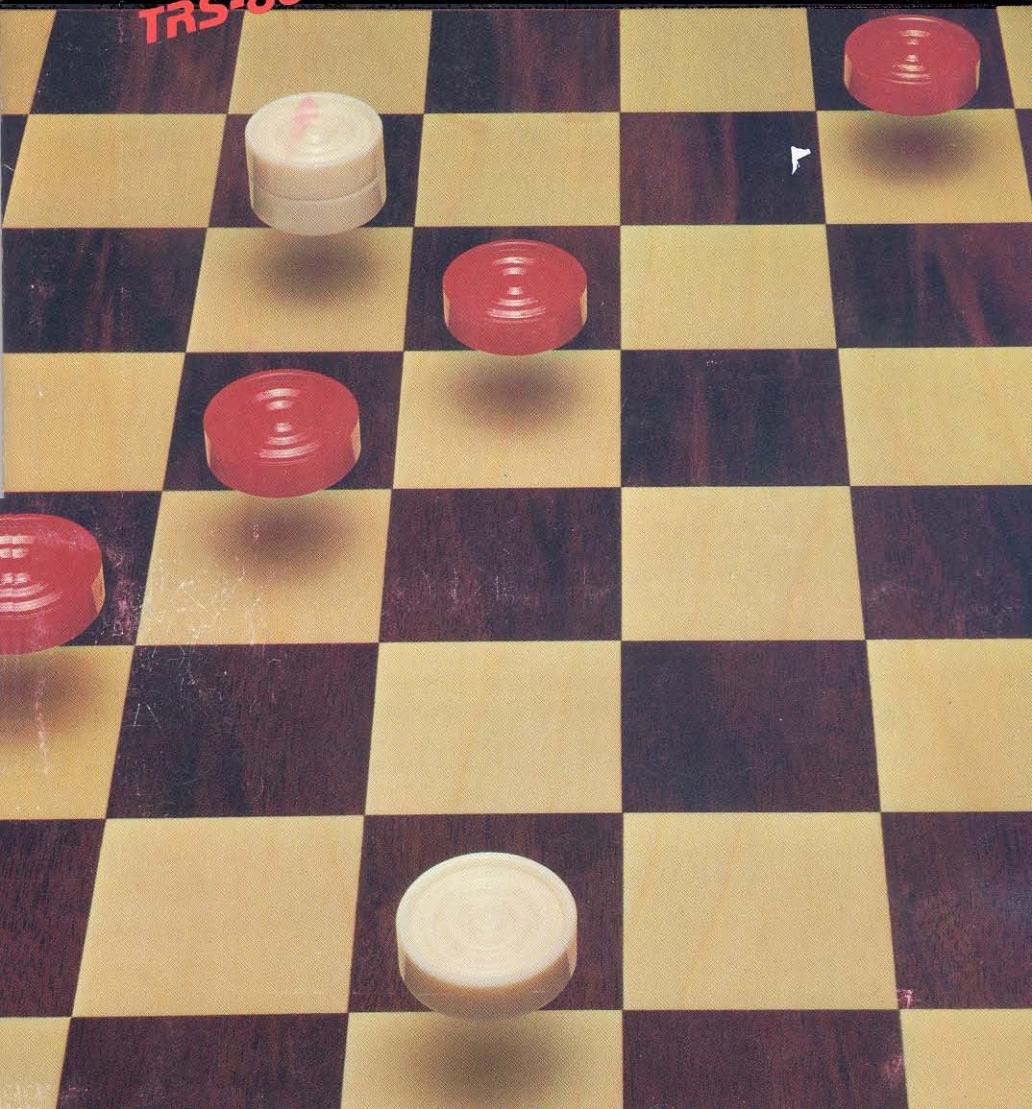


PERSONAL SOFTWARE™

# CHECKER KING

TRS-80 LEVEL II 16K



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# **CHECKER KING**

## **For the TRS-80**

**Written by Michael Marks**

Whether you are a novice in the process of learning the game or an expert looking for a challenging opponent, Personal Software's Checker King will provide a capable and willing competitor.

Everyone can discover a new level of checkers not found in other programs by playing with Checker King's powerful, flexible features:

- Play different levels of skill from 1 (easy) to 8 (a real challenge).
- See all moves displayed graphically and numerically.
- Modify the board by removing and adding pieces.
- Save up to three board positions and later recall them for study and play.
- Correct your mistakes by going back and making a better move.
- Switch sides with Checker King.
- Pit Checker King against itself.
- A Bonus: Test your ingenuity against three Checker puzzles contained in the program.
- Use official checker notation . . . and a lot more.

Checker King for the TRS-80 is a Z-80 machine language program, written with the same advanced artificial intelligence techniques that have made Personal Software's Microchess program the first "gold record" (50,000 units) best seller.

Please treat your Checker King cassette with care and read these instructions thoroughly before you begin. Checker King can only be loaded from the cassette supplied by Personal Software; it cannot be copied onto another cassette or disk using the BASIC CSAVE command or the machine language monitor, nor can it be reliably copied using two tape recorders.

Checker King is written by Michael Marks and produced and marketed by Personal Software Inc. For a catalog of Personal Software products, see your Personal Software dealer or write Personal Software giving your complete address, your TRS-80 configuration (Level I or II, memory size, program storage hardware, etc.) and your most wanted software products. We'd also appreciate your comments on Checker King, both good and bad.

## **LOADING CHECKER KING**

Since Checker King is a Z-80 machine language program, the procedures for loading it from cassette are somewhat different from those of regular BASIC programs. Once Checker King is loaded, you can play as many games of checkers as you please (using the 'R' command to reset the board; see instructions that follow). Do not turn off the power switch to the computer or you will have to reload your cassette.

The most sensitive variable in making a successful load is the tape recorder's volume setting. To find the correct setting, load a Radio Shack supplied cassette program into your TRS-80. Once you have verified that this program will load, take out the cable plugged into the tape recorder's EAR socket and play a portion of the tape, listening to its volume. Next, insert your Checker King cassette, play a portion of the tape and listen again, adjusting the volume so it creates the same volume of sound as did the Radio Shack program. Checker King is recorded on extremely high quality tape, and may load at lower volume settings.

**Loading Level I.** Once a preliminary volume setting is made, probably 7-8 for Level I, follow these steps:

1. Fully rewind the Level I tape.
2. Type CLOAD (do not press ENTER yet).
3. Press the recorder's PLAY button to start the tape.
4. Press the ENTER key. In a moment, two asterisks should appear in the upper left corner of the screen. One asterisk will flash occasionally, which is normal for a machine language program. Be sure to wait long enough for the program to load; the index counter on the Radio Shack CTR-41 recorder will go to at least 70.

**Troubleshooting:** If the asterisks never change, the volume is probably too low; raise the volume slightly and try again. Or, if you get the message WHAT?, invalid data has been read and a 'checksum error' has occurred. Raise the volume and try again. If this doesn't solve the problem, clean and/or demagnetize your recording heads.

5. When the checker board appears on the screen the program is loaded. Stop the tape recorder and rewind the tape.

Once you have successfully loaded Checker King, you might write the proper volume setting on the cassette label for future use.

**Loading Level II.** Once a preliminary volume setting is made by following the instructions at the beginning of the Loading section, probably 6-7 for Level II, follow these steps:

1. Fully rewind the Level II tape.
2. **For a TRS-80 system without an Expansion Unit**, type SYSTEM and press ENTER. The \*? prompt of the Level II machine language loader will appear. Go to step 3.  
**For a TRS-80 system with an Expansion Unit**, follow the procedure for loading cassette software:
  - a. With the computer off, hold the BREAK key and turn on the power.
  - b. When MEMORY SIZE? MEMORY SIZE? appears, press ENTER.
  - c. When READY and the > prompt appear, type SYSTEM and press ENTER. The \*? prompt will appear.
3. Type CHECK (do not press ENTER yet).
4. Press the recorder's PLAY button to start tape.
5. Press the ENTER key. After several seconds, two asterisks — one flashing — will appear in the upper right corner of the screen and a second \*? prompt will appear.

**Troubleshooting:** If you don't see the flashing asterisks at all, the volume setting is probably too high; lower it a bit and try again. If a C appears in the upper right corner of the screen, a 'checksum error' has occurred and the volume is probably too low; raise the volume slightly and try again.

6. Immediately after the second prompt (?) appears, type a slash mark (/) and press ENTER. After several more seconds, an asterisk will appear in the lower right corner of the screen and slowly flash on and off, indicating that the program is loading. Be sure to wait long enough for the program to load; the index counter on the Radio Shack CTR-41 recorder will go to at least 60.
7. When the checker board appears on the screen the program is loaded. Stop the tape recorder and rewind the tape.

Once you have successfully loaded Checker King, you might write the proper volume setting on the tape label for future use.

## THE BOARD DISPLAY

The board will be recognized by anyone who has played checkers before. Checker King sets up the board with its own men in black at the top of the display, and your men in white at the bottom. You will always play with the white pieces and the Checker King will always play with the black, but you may exchange positions at any time — more about that later in the Exchanging Position section.

## BOARD NOTATION: The 'N' Command

Following the official Checker notation rules, the black squares of the board are numbered consecutively from one to 32, beginning at the upper left corner of the board and following along each row left to right, to the lower right corner. To see this notation displayed, simply press and hold down the 'N' key. The numbers will be displayed as long as this key is depressed.

## **SELECTING A SKILL LEVEL: The 'IQ' Command**

Checker King can play eight different levels of skill. The level at which it is playing is always shown by the IQ display at the right hand side of the screen. When you load the Checker King program, the IQ will be at Level 4. To change the level of play at any time, before or during the game, simply type IQ=X (where X is a number from 1 to 8) and press ENTER. For example, if you want to play at an IQ level of 6, type IQ=6 and press ENTER. At Level 1, it will play a quick, friendly game taking only a few seconds per move. At Level 8, Checker King will play a very competitive game, considering each move for a very long time. After a few games you will probably find the range of levels which suit you best.

**IQ Versus Speed.** In considering its best move, Checker King first examines all possible legal moves it can make in the particular situation. It then generates and examines all possible reply moves which could be made, and then all of the continuation moves it could make to your reply. The higher the IQ level selected, the further ahead the program looks. Because of this method of evaluation, a move decision takes much longer to make when there are many pieces on the board than when there are few. For this reason, if you want to make the best use of time available for a game, play the early part of the game at a lower IQ level to speed it up, and move up to a higher IQ level when there are fewer pieces on the board.

## **OUTPUT DISPLAY: Checker King's Moves**

The top right display area is used for Checker King to report its moves to you. When the program is first loaded, this area will be blank. Once the game has begun, one of two things will always show. When it is Checker King's turn to move, the first thing you will see is a 'THINKING' message and a moving dot. Because Checker King takes a great deal of time to make up its mind when playing at higher IQ levels, the 'THINKING' indicator assures you that it hasn't fallen asleep on you. When Checker King makes a decision, it will move its piece on the display and also record the move in this display area using official checker notation.

## **INPUT DISPLAY: Your Moves**

The bottom right hand corner of the display is where you will record your moves, or enter commands to alter the course of the game. You will also receive messages from the computer to assist you in entering valid commands.

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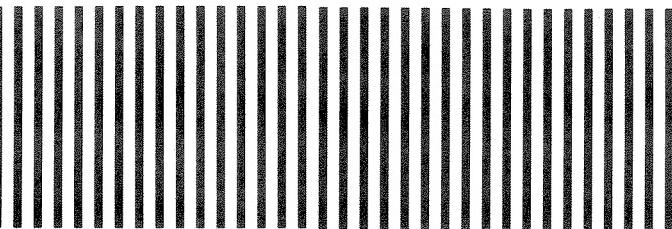
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## **MAKING THE FIRST MOVE: The ‘P’ Command**

Checker King, being a courteous player, gives you the opportunity to take the first move and will wait for you to do so. At your option, you can have the Checker King move first by typing ‘P’ and pressing ENTER. Use this command at any time during the game to postpone or forfeit your move. Other specific situations where you might use the ‘P’ command will be mentioned later.

## **ENTERING YOUR MOVE**

To enter a single move, simply type in the number of the space your piece is on, followed by a hyphen, followed by the square the piece is moving to, and press ENTER. For example, a typical opening move for white might be:

**24-19 ENTER**

If the move being made is a single jump over a black checker, the same notation is used; Checker King will recognize your capture of its checker and remove it from the board.

To enter a multiple jump in which you capture more than one black checker, each stage of the move must be entered, separated by hyphens:

**25-18-9 ENTER**

Playing by the official checker rules, both you and Checker King must make a capturing move when it is available. If you try to make a non-capturing move, Checker King will give you the message; INPUT ERROR, MUST JUMP. You are then given another opportunity to complete the capturing move.

## **TAKING BACK YOUR MOVE: ‘GØ’ Command and BREAK Key**

These are two ways to take back the move you just made if you want to correct a mistake or change your mind. Both the ‘GØ’ Command and the BREAK key return the game to the board position just prior to your last move, but they are used in different situations.

**‘GØ’ Command.** Use when you want to ‘go back’ to change your last move and Checker King has already completed its move in response. Just type GØ and press ENTER. The board pattern will return to the previous position and it will be your move. Note: this is the number Ø rather than the letter O.

**The BREAK Key.** Use when you want to 'go back' to change your last move and Checker King is in the 'THINKING' process prior to moving. Just press the BREAK key. This is helpful when playing at higher IQ levels because Checker King might take several minutes of 'THINKING' before it moves. Note: it may take a second or two before the computer notices that you have pressed the BREAK key, so hold it down until the board returns to the previous position.

(Use of the 'G0' Command and BREAK key might be construed as cheating by some, but we'll leave it to you to set the moral standards of the game.)

## **EXCHANGING POSITION: The 'X' Command**

You can exchange positions with Checker King by typing the 'X' key and pressing ENTER. This can be done at any point in the game when it is your turn to move. When you use this command, Checker King will turn the board around so that you can play its checkers and it plays yours. So that you don't get confused by colors, Checker King will also, when turning the board, change the colors of the pieces. This way you will again be playing with white pieces, but they will be arranged exactly as Checker King's black pieces were arranged before the switch. When the exchange is complete, Checker King will wait for you to make the first move. You can use the 'P' command to have Checker King move first.

## **CHECKER KING VS. CHECKER KING: The 'X' and 'P' Commands**

Watch Checker King play a game against itself by using both 'X' and 'P' commands. To start the game, type 'P' and press ENTER. After Checker King makes its first move, type 'X', press ENTER, then type 'P' and press ENTER. Wait for it to move again and repeat the dual commands. This feature allows you to see how Checker King would handle your play during a game, which is an interesting way to learn a few of its tricks.

## **SAVING BOARD POSITIONS: The 'S' Command**

Sometimes in the middle of a game an interesting position develops; Checker King allows you to save it and come back to it later for further study. You may use the save command three times without affecting the game. When it is your move, type 'S1' and press ENTER to save the first position, 'S2' ENTER for the second position, and 'S3' ENTER for the third. The 'S' command will store the current position in one of the three board position memories until the machine is turned off or another position is saved in its place. Retrieve the saved position with the 'G' command, explained below.

## **RETRIEVING SAVED POSITIONS: The ‘G’ Command**

If you have saved a board position using the ‘S’ command, you may retrieve it by typing ‘G1’, ‘G2’ or ‘G3’ (corresponding to ‘S1’, ‘S2’ or ‘S3’) and pressing ENTER. The position will appear on the screen and Checker King will wait for you to make the first move.

## **MODIFYING THE BOARD: The ‘M’ Command**

Checker King will allow you to alter the position of the board or set up a completely new situation by removing pieces and/or adding pieces. Anytime that it is your turn, type ‘M’ and press ENTER and Checker King will instruct you with a series of five modification prompts that appear on the lower right section of the screen.

**Remove Pieces.** This first modify prompt allows you to remove any piece or pieces belonging to you or Checker King. Just type the number of the square the piece occupies and press ENTER. If you remove more than one piece, list the square numbers, separating each with a comma (7, 22, 28, 31), and press ENTER.

**Your Pieces.** The second modify prompt allows you to add your regular pieces. Just type in the unoccupied square numbers where you would like your regular pieces to be placed, separated by commas, and press ENTER.

**Your Kings.** The third modify prompt allows you to add your kings. Type in the unoccupied square numbers where you would like them placed, separated by commas, and press ENTER.

**My Pieces.** The fourth modify prompt allows you to add Checker King’s regular pieces. Type in the unoccupied square numbers where you would like them placed, separated by commas, and press ENTER.

**My Kings.** The fifth modify prompt allows you to add Checker King’s kings. Type in the unoccupied square numbers where you would like them placed, separated by commas, and press ENTER.

If you happen to leave out a piece or put it in the wrong square, wait until the end of the series of modifications is complete, then type the ‘M’ ENTER command again and run through the sequence a second time. If you do not want to remove or add any pieces during any of the modification functions, press ENTER and go to the next instruction. When the modification prompt sequence is completed, Checker King will wait for you to make the first move.

## **CLEARING THE BOARD: The 'C' Command**

If you want to clear all the pieces from the board to set up a special situation, just type C and press ENTER. You can then use the 'M' command to place pieces wherever you want them.

## **STARTING A NEW GAME: The 'R' Command**

Use the 'R' command to end a game in progress and to start a new game. Anytime during the game when it is your turn, type 'R' and press ENTER. Checker King will acknowledge your input by displaying "YOU RESIGNED." To reset the display and start a new game, type 'R' again.

## **CHECKER KING BONUS: 3 Checker Puzzles**

When Checker King is initially loaded from tape, three puzzles are contained in the program's three memory areas. Any puzzle may be played when loaded or later, but the puzzles will be erased from memory when board positions are saved using the 'S' command. ('S1' erases the first puzzle, 'S2' erases the second, etc.) To play the first puzzle, type 'G1' and press ENTER. Type 'G2' and press ENTER for the second puzzle, and 'G3' ENTER for the third.

In each puzzle it is possible for you to win the game in a short sequence of moves. You can try to solve the puzzles at any IQ level. See if you can find the winning series of moves. If you give up, exchange sides using the 'X' and 'P' commands (see Checker King Vs. Checker King section) and let Checker King play your board. The three puzzles have different levels of difficulty and Checker King must be set at least at the level of play indicated below. Good luck!

|          | <b>Minimum Number<br/>of Half Moves</b> | <b>Minimum IQ Level<br/>for Computer's Play</b> |
|----------|-----------------------------------------|-------------------------------------------------|
| Puzzle 1 | 5                                       | 3                                               |
| Puzzle 2 | 9                                       | 5                                               |
| Puzzle 3 | 9                                       | 7                                               |

## **APPENDIX A: RULES OF THE GAME**

Although you probably know the basic rules of checkers already, we have set out a full description to be sure you are not caught by surprise by any of the "fine print" regulations which Checker King will follow. These rules will also settle disagreements about how the game is played.

The checker board consists of a square divided into 64 smaller squares, alternately colored black and white. All play of the game takes place on the black squares.

Each player starts off with twelve pieces (or "checkers" or "men") on opposite sides of the board. The aim is to capture all of your opponent's pieces, or to trap them in such a way that he has no legal move available.

Players may use whatever method they wish to decide who gets the first move; after that, players move alternately. A player may move any piece diagonally forward one square, if the square on which it will land is vacant. Alternately, he may capture an opposing piece which is on an adjacent square if the square beyond that is vacant. This is accomplished by jumping over the opposing piece, landing on the square beyond, and removing the opposing piece. If, on landing, his piece is in a position to capture another opposing piece in the same manner, it may continue to jump as long as its movement is forward on the board. If a player has a capturing move available, he must take it rather than making a non-capturing move, but he may choose freely between capturing moves if more than one is available.

If a checker moves to its opponent's back row without being captured, it becomes a king. A king has all of the same powers as a regular piece, plus the ability to move backwards as well as forwards. However, if a checker reaches the "king" row by jumping, it may not jump back out again in the same move; it must stop to be crowned.

## APPENDIX B: COMMAND SUMMARY

| Command                              | Function                                                                                                                                                                        |
|--------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>BREAK</b>                         | Returns board to its position just prior to your last move; use when Checker King is 'THINKING' about its reply. (See GØ.)                                                      |
| <b>C ENTER</b>                       | Clears all pieces from the board.                                                                                                                                               |
| <b>G Ø ENTER</b>                     | Returns board to its position just prior to your last move; use when Checker King has already replied. (See BREAK.)                                                             |
| <b>G (X) ENTER</b>                   | Retrieves any of three board positions saved during a game, where (X) is a number 1, 2 or 3: G1, G2 or G3. (See 'S'.) Also displays any of three checker puzzles: G1, G2 or G3. |
| <b>I Q = (X) ENTER</b>               | Sets skill level, where (X) is a number from 1 to 8.                                                                                                                            |
| <b>M ENTER</b>                       | Modifies the board by removing and/or adding checker pieces, using five modification instructions:                                                                              |
| <b>Remove pieces</b>                 | Remove any piece or pieces belonging to you or Checker King.                                                                                                                    |
| <b>Your pieces</b>                   | Add one or more of your regular pieces.                                                                                                                                         |
| <b>Your kings</b>                    | Add one or more of your kings.                                                                                                                                                  |
| <b>My pieces</b>                     | Add one or more of Checker King's regular pieces.                                                                                                                               |
| <b>My kings</b>                      | Add one or more of Checker King's kings.                                                                                                                                        |
| <b>N</b>                             | Displays the numbers of the board squares.                                                                                                                                      |
| <b>P ENTER</b>                       | Postpones or forfeits your move by giving the move to Checker King.                                                                                                             |
| <b>X ENTER</b> and<br><b>P ENTER</b> | Pits the Checker King against itself; the 'X' ENTER exchanging positions and 'P' ENTER giving the move to Checker King.                                                         |
| <b>R ENTER</b>                       | Resigns a game in progress and, when repeated, resets the board for another game.                                                                                               |
| <b>S (X) ENTER</b>                   | Saves up to three board positions during a game to be retrieved later, where (X) is a number 1, 2 or 3. (See 'G'.)                                                              |
| <b>X ENTER</b>                       | Exchanges positions with Checker King.                                                                                                                                          |

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